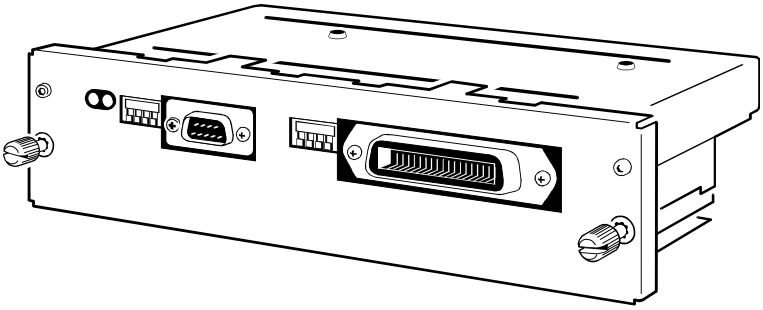
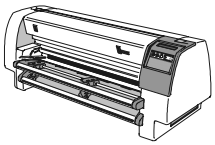
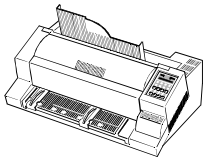
PM IPDS

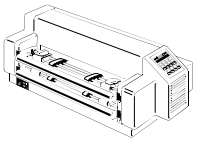
Reference Manual

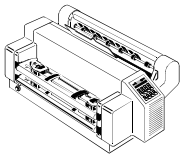


for Printer









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Reference :

- IBM IPDS Reference (S544-3417-03)
- IBM IPDS 4224 Printer Product and Programming Description Manual (GC31-2551-1)

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Preface

The PM IPDS Reference Manual describes the installation, configuration and the functions of the IPDS printer. You will find additional information in the Printer User’s Manual, and Internet www.psi-si.de.

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1 Introduction

1.1 Interfaces

The PM IPDS is equipped with a Twinax- and a parallel Centronics-interface, which can be used simultaneously in shared mode.
The Twinax-interface connects to the network via a T-connector which comes with the product.

1.2 Host connectivity

With the PM IPDS, the printer may be attached to the following host systems :
- **AS/400**
- **S/38**
- **S/36**

1.3 Functionality

The PM IPDS can be run in two different operating modes :
- **IBM 4224**
- **IBM 3812**

Dependent on the application the right operating mode has to be selected on the PM IPDS.
At the host the printer can work as an IBM 4224, IBM 3812 or *IPDS. The recommended printer driver is *IPDS, which allows best use of the printer's functionality.
To make translation of the IPDS datastream into the printer's native command sequences possible a resource is used, which is a downloadable file.
Further more those resources provide access to all printer specific capabilities as
- **all resident fonts** (see appendix A)
- **all print modes**
- **all paper pathes** (see chapter 2.5.1.3)
- **colour-printing** (only for printer PP 405)

The standard PM IPDS is equipped with four printer adaptions to assure best possible attachment to the host (see chapter 2.4.2).

- ***autocut-printer with paper path control**
- **Without paperpath control**
- ***cont-printer with paperpath control**
- ***autocut-printer with macro control**

These adaptions render manifold use of the PM IPDS printer in different applications. In addition, there is implemented a transparency mode, providing a transparent transfer of Escape-sequences.

1.4 Supported IPDS Towers

DC/1 Device Control : **This IPDS Tower is completely supported.**
"Landscape" format is realized by feeding landscape paper from a predefined cassette.

PT/2 Presentation Text : **This IPDS Tower is completely supported.**
Landscape printing as above.

IM/1 Image : **This IPDS Tower is completely supported.**
Images up to a max. size of approx. 125 KB can be processed, what is determined by the residual RAM size of the PM IPDS.

DR/2 Graphics : **This IPDS Tower is supported with restrictions.**
GDF and **GDDM** data are supported if they contain **horizontal** and **vertical lines** or **block characters**.
Graphical block orientation: 0°, 90°, 180° and 270°.
BGU data cannot be printed.
Bitmap graphic of IM/1 is supported. Print resolution: 180 x 180 dpi.

BC/1 Barcode :

This IPDS Tower is completely supported.
All following barcodes with their specific parameters can be printed. Barcode block orientation: 0°, 90°, 180° and 270°:
– 3 of 9 Code
– MSI
– UPC version A
– UPC version E
– UPC Two Digit Add-On (magazine)
– UPC Five Digit Add-On (paperback)
– EAN-8
– EAN-13
– 2 of 5 Industrial
– 2 of 5 Matrix
– 2 of 5 Interleaved
– EAN Two Digit Add-On (magazine)
– EAN Five Digit Add-On (paperback)
– Codabar
– POSTNET
– Code 128

OL/1 Overlay and
PS/1 Page Segment :

This IPDS Tower is completely supported.
Overlays and page segments may contain all supported commands of PT/2, BC/1, DR/2 and IM/1 Tower. Image size depends on the residual buffer size of max. 125 KB.

Loaded Font :

This IPDS Tower is not supported.

1.5 Printer configuration

There are two possibilities for configuring the printer system interface:

– **via the dip-switches on the PM** (see chapter 3.2, Page 3-2)
– **by use of IPDS Printer Resource Files** (see chapter 3.1, Page 3-1)

2 Installation

2.1 Installing the IPDS PM

For installation of the PM IPDS it is referred to the Printer User's Manual.

The PM IPDS specific components are shown in figure 1.

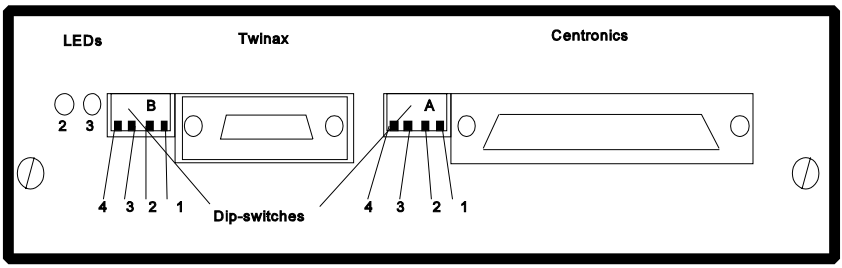

Figure 1 : Rear of the PM IPDS

2.2 Meaning of the LEDs

Table 1: **Meaning of the LEDs**

LED 2	Configuration via PC
LED 3	Hostconnection activ

2.3 Printer Setup

The configuration of the printer may be changed via the Operator Panel as described in the Printer User's Manual.
With the appropriate keys you can pass through a menu, where all adjustable printer functions are laid off. The LCD shows the current menu point.

The printer should have the recommended adjustments shown in table 2.

If printer adaption 4 (**macro control**) is used and the printer is not able to select the right emulation by Escape commands assure that each macro has the emulation to **EPSON LQ**. Pay attention to the fact, that selecting a macro affects the current printer settings.

The following steps have to be performed :
– Prepare printout
– Compare setup with table 2
– If not in coincidence, configure accordingly
– Save

Table 2: **Recommended printer setup**

FUNCTION	ITEM/VALUE
CHANGE MACRO #	
FONT	user dependent
PITCH	10 CPI
LINE	6 LPI
PAGE LENGTH	user dependent
LEFT MARGIN	1. COLUMN
RIGHT MARGIN	136. COLUMN
TOP MARGIN	1. LINE
BOTTOM MARGIN	1. LINE
PERF. SKIP	NO
EMULATION	EPSON LQ
CHARACTER SET	IBM CODE PAGE CP850
LINE MODE	LF=LF, CR=CR
$$ - COMMANDS *****	YES *** if implemented**

2.4 PM IPDS Setup

The default setup of the Twinax-address is **0**. If your system does not allow this address, select a Twinax-address as described in chapter 2.4.1
In some cases the IPDS driver (default: IBM 4224) and the printer adaption have to be changed. (see chapter 3)

The IPDS Printer setup incl. the printer adaptions can be printed for reference:
Set switch A1 and B4 to ON, all other switches to OFF and switch-on the printer

The actual IPDS Printer setup will be printed. Then reset switches A1 and B4 to OFF.

2.4.1 Twinax-address setup

Before turning on the printer set switch A4 to ON and the others to OFF.
Switch the printer on and wait until LED 2 is lit.
Define the Twinax-address according to the following table.

Table 3 : **Twinax-addresses**

B1	B2	B3	B4	Description
OFF	OFF	OFF	OFF	Address 0
OFF	OFF	OFF	ON	Address 1
OFF	OFF	ON	OFF	Address 2
OFF	OFF	ON	ON	Address 3
OFF	ON	OFF	OFF	Address 4
OFF	ON	OFF	ON	Address 5
OFF	ON	ON	OFF	Address 6

Set switch A4 to OFF and wait until LED 2 goes off. Set A4 again to ON, LED 2 is on.
Turn off the printer and set all switches to OFF.
After this procedure the printer works on the specified address and is ready for operation.

2.4.2 Printer adaption setup

The PM IPDS is equipped with four predefined adaptions (Table 5, page 2-7). With these adaptions the printer can work in four different modes:

– ***autocut-printer with paper path control** which gives access to all paper paths of the printer (with cut function).

– **Without paper path control**. The paper path adjusted in the printer's current settings is taken.

– ***cont-printer with paper path control**. Only tractor (without cut function) and manual front insertion are available.

– ***autocut-printer with macro control**. Instead of paper paths the four printer-macros can be selected.

The paper paths (macros) are selected via the corresponding system parameters (see chapter 2.5.1.3)

The default printer adaption is 1.

Your application may require some additional modifications in the setup as described in chapter 3.

2.5 Printer installation on the host

2.5.1 AS/400 system environment

The AS/400 offers two possibilities of printer installation :
– automatic configuration
– manual configuration

2.5.1.1 Automatic configuration

If AUTO CONFIGURATION is on (system value QAUTOCFG set to "1") and the PM IPDS has been configured already, the Twinax-cable can be attached to the selfterminating T-connector. Provide that port and line address were not previously used for connecting a printer. After turning on, the printer is configured automatically on the AS/400.

2.5.1.2 Manual configuration

If AUTO CONFIGURATION is off (system value **QAUTOCFG** set to "**0**") the printer must not be attached.
Manual configuration is done in three steps :

- If the printer is to connect on port 4 and address 4, the following command line is to type in :

```
CRTDEVPRT DEVD(PRTxx) DEVCLS(*LCL) TYPE(type) MODEL(model)
PORT(4) SWSET(4) CTL(CTLcc)
```

xx specifies the device ID and *cc* the Twinax controller ID. *Type* and *model* have to be replaced through the values in table 4.
The device "PRTxx" is thus ’created’ on the Twinax-controller "CTLcc".

Table 4: **Configuration AS/400**

Type Code (type)	Modell Number(s) (model)
3812	1
4224	2
***IPDS**	**0 (PM IPDS)**

- The printer now has to be connected to the Twinax-cable.
  Switch on the printer.
  With the following command line the printer is to vary on at the system:

```
WRKCFGSTS CFGTYPE(*DEV) CFGD(PRTxx)
```

– To verify the connection between printer and system a testprogram has to be started by typing in the next command line :

```
VRYCFG CFGOBJ(PRTxx) CFGTYPE(*DEV) STATUS(ON)
```

The printer PRTxx is now logically online.

2.5.1.3 Paper path selection

After installation on the host the printer works as a ***IPDS**. The automatic configuration of the AS/400 identifies it as a cut-sheet-printer **(*autocut)**. Dependent on the printer model, three ASF-cassettes, one/two tractor feeds **(*e1)** and the manual front insertion or two tractor feeds with two paper exits are addressable. The printer can also be defined as a fanfold-paper printer **(*cont)**. Table 5 shows how to select the paper paths from the system.
The PM IPDS printer has four standard printer adaptions loaded, two with paper path control (1, 3), one without paper path control (2) and one with macro control (4).
Factory default is printer adaption **1**.
To change the printer adaption see chapter 3 and Table 16 on page 3-5.

Table 5: **Paper path selection**

System	Adap.1 *autocut with paper path control PP405- PP407/8-PP806	Adap.2 without paper path control	Adap.3 *cont with paper path control	Adap.4 *autocut with macro control
tractor	- - -	-	tractor tractor pool -> batch	-
drawer1 bin1	ASF1 tractor lower ->stacker, cut ASF1	-	-	macro1
drawer2 bin2	ASF2 tractor upper -> stacker, cut ASF2	-	-	macro2
drawer3 bin3	ASF3 tractor lower -> batch, cut ASF3	-	-	macro3
drawer4	- - tractor upper			
*e1 envelope	tractor tractor pool tractor lower	-	-	macro4
manual	manual front insertion tractor upper -> batch, cut	-	manual front insertion tractor pool -> batch	macro3

2.5.2 S/38-system connection

First the subsystem software is to vary off, as well as the Work Station Controller (WSC) for the port to which the printer will be attached.
The following command line gives a device description to the system :

```
CRTDEVD DEVD(PRTxx) DEVADR(yyy) DEVTYPE(type) MODEL(model)
```

xx specifies the device ID and *yyy* is the port/line address. *Type* and *model* have to be replaced through the values in table 6.

Table 6: **Configuration S/38**

Type Code (type)	Model Number(s) (model)
3812	1
4224	2
***IPDS**	**0 (PM IPDS)**

After the type-in procedure is done the WSC and the subsystem software can be varied on again.

Note: The S/38 requires, after any device configuration changes, that:

- an IPL is made, or
- the subsystem is turned off and on again.

2.5.3 S/36-system connection

To configure the S/36 the system support program is to call up by typing in :
CNFIGSSP <enter>.
Select option 2 and press <enter> in the following two menues, until the "menu configuration entry" is reached.
Selection of option 1 : "Working with Displays and Printers".
Selection of option 1 : "Addition or Deletion of Local Displays and Printers".
When a new screen appears and the keyboard is unlocked <enter> is to press. On the next screen, a diagram of the S/36 with port/line addresses and attached device codes is displayed :

```
0     1     2     3     4     5     6     <-- Station address

01    PB                                      0--!----------!
16    EA    PH                                1--!          !
                                              2--!          !
                                              3--!          !
                                              4--!          !
                                              5--!----------!
                                            port on S/36
```

The example shows S/36 having one 5251 model 11 display with line address 0 and a 5256 printer with line address 1 configured on port 0, and a 3197 model D display with line address 0, a 4214 model 2 printer with line address 1 and an IPDS printer with line address 2 configured on port 1. Now the code for the device can be entered corresponding to tables 7 and 8.

These two tables are only extracts from the lists which are at your disposal when "Display configuration option" of CNFIGSSP is chosen.
When the appropriate device code has been entered correctly, the configuration can be finished by pressing function key <F3> four times.

Note: – IPL the system. This is essential as configuration is not dynamic and the change(s) are only effective after an IPL.
– Display codes have two numeric digits and printer codes are two letters.

Table 7: **Configuration S/36, CNFIGSSP - Machine codes for displays**

Code	Type	Code	Type
01	5251 Model 11	16	3197 Model D

Table 8: **Configuration S/36, CNFIGSSP - Machine codes for printers**

Code	Type	Code	Type
PA	3262	**PH**	**IPDS (PM IPDS)**
PB	5256	HA	4224 Model 1
EA	4214 Model 2	HB	4224 Model 2

3 PM IPDS Configuration

This chapter deals with the configuration of the PM IPDS. It shows how to change the factory defaults.

There are two procedures to change the configuration :
- **configuration via the Dip-switches**
- **configuration via PC** with IPDS Printer Resource Files

The configuration via switches influences only the system parameters whereas configuration via PC allows to change all parameters.

3.1 **Configuration via PC** (IPDS Printer Resource Files)

IPDS Printer Resource Files are downloadable from Internet www.psi-si.de.
The files can be modified using a standard text-editor (DOS) or compatible.

The IPDS- printer has to be connected via the parallel Centronics interface.
Before downloading the modified IPDS Printer Resource File to the printer set switch B1 to ON, all others to OFF, power-on the printer and wait until the printer is READY. Then set switch B1 to OFF and start file transfer to printer. After the file transfer is complete and the update of the setup is finished the two LEDs are flashing.

The following parameters can be modified::

- Twinax-address
- Emulation/Driver
- Printer adaption
- Paper path
- Bar code
- Graphics
- Language (national character sets)
- Escape character
- Escape mode,

3.2 Configuration via Dip-switches

Adjustable parameters:
- Twinax-address
- Emulation/Driver (IPDS)
- Language
- Paper path
- Escape character
- Escape mode
- Printer adaption

To change the parameters the following has to be done :
- Before turning on the printer set switch **A4** to **ON** and all the others to OFF.
- Switch the printer on and wait until **LED 2** is lit.
- Use the switches **A1** to **A3** for selection of the parameter according to table 9.
- Adjust the parameter-value with switches **B1** to **B4** according to tables 10-16.
- Switch **A4** to **OFF**-position, **LED 2** goes **off**. Switch **A4** again to **ON**, **LED 2** lights. The value was stored.
- For each selection repeat the last three steps above.
- Turn off the printer and set all switches to **OFF**-position. With next switching on the printer works with the new settings.

Table 9: **Parameter numbers**

A1	A2	A3	Description
OFF	OFF	OFF	Twinax-address
OFF	OFF	ON	Emulation / Driver (IPDS)
OFF	ON	OFF	Language
OFF	ON	ON	Paper path
ON	OFF	OFF	Escape character
ON	OFF	ON	Escape mode
ON	ON	OFF	Printer adaption

Table 10: **Twinax-address**

B1	B2	B3	B4	Description
OFF	OFF	OFF	OFF	Address 0
OFF	OFF	OFF	ON	Address 1
OFF	OFF	ON	OFF	Address 2
OFF	OFF	ON	ON	Address 3
OFF	ON	OFF	OFF	Address 4
OFF	ON	OFF	ON	Address 5
OFF	ON	ON	OFF	Address 6

Table 11: **Emulation / Driver (IPDS)**

B1	B2	B3	B4	Description
OFF	ON	OFF	ON	IBM 3812
ON	OFF	OFF	OFF	IBM 4224

Table 12: **Paper path**

B1	B2	B3	B4	Description
OFF	ON	ON	ON	Tractor (param.: 32, 7) -> only *cont
OFF	OFF	OFF	OFF	Drawer1/Bin 1 (param.: 0)
OFF	OFF	OFF	ON	Drawer2/Bin 2 (param.: 1)
OFF	OFF	ON	OFF	Drawer3/Bin 3 (param.: 2)
ON	OFF	OFF	OFF	*e1 (param.: 64, 8)
ON	OFF	OFF	ON	Manual (param.: 99, 9)

Note: By default this parameter is set to ’99’ (manual front insertion). This should never be changed. If a change must be performed pay attention to the fact that the selected paper feed is within the current printer adaption. Otherwise major functional errors could occur.

Table 13: **Language**

B1	B2	B3	B4	Description	Code
OFF	OFF	OFF	OFF	Multinational	500
OFF	OFF	OFF	ON	United States	37
OFF	OFF	ON	OFF	Austria/German	273
OFF	OFF	ON	ON	Belgium	274
OFF	ON	OFF	OFF	Brazil	275
OFF	ON	OFF	ON	Canadian (French)	276
OFF	ON	ON	OFF	Denmark / Norway	277
OFF	ON	ON	ON	Finland / Sweden	278
ON	OFF	OFF	OFF	France	297
ON	OFF	OFF	ON	Italy	280
ON	OFF	ON	OFF	Latin 2	870
ON	OFF	ON	ON	Turkish	1026
ON	ON	OFF	OFF	Portugal	282
ON	ON	OFF	ON	Spain	284
ON	ON	ON	OFF	Greek	875
ON	ON	ON	ON	United Kingdom	285

Other code tables supported are selectable by software only:
Greek 423; Yugoslavia 890; OCR A 340, OCR B 892;

ECECP European Euro Extended Code Pages:
USA ECECP 1140, Austria/Germany 1141; Den/NOR 1142, FIN/SWED. 1143,
Italy 1144, Spain/Latin Am. 1145, U.K. 1146, France 1147, International 1148

Table 14: **Escape character**

B1	B2	B3	B4	Description
OFF	OFF	OFF	ON	Character $ (130)
OFF	OFF	ON	OFF	Character @ (131)
OFF	OFF	ON	ON	Character # (129)
OFF	ON	OFF	OFF	**Character ^ (135)**
OFF	ON	OFF	ON	Character % (37)
OFF	ON	ON	OFF	Character ~ (141)
OFF	ON	ON	ON	Character & (38)

Table 15: **Escape mode**

B1	B2	B3	B4	Description
OFF	OFF	OFF	OFF	Escape deactivated
OFF	OFF	OFF	ON	Hexadecimal Number
OFF	OFF	ON	OFF	Direct Conversion

Table 16: **Printer adaption**

B1	B2	B3	B4	Description
OFF	OFF	OFF	OFF	no function
OFF	OFF	OFF	ON	Adaption 1
OFF	OFF	ON	OFF	Adaption 2
OFF	OFF	ON	ON	Adaption 3
OFF	ON	OFF	OFF	Adaption 4
OFF	ON	OFF	ON	Adaption 5
OFF	ON	ON	OFF	Adaption 6
OFF	ON	ON	ON	Adaption 7
ON	OFF	OFF	OFF	Adaption 8

4 Escape Function (Transparency Mode)

All printer capabilities described in the Printer User's Manual, especially such unknown in the IBM environment, can be controlled by so-called "User Definable Escape" functions" (UDEs).
These functions bypass the control codes off the print-spool and print-processing of the IBM system. This avoids conflicts with control codes having a meaning in the IBM environment.
A selectable character included in the IBM character set has to be specified on the printer (see chapter 3.1). This character is called Escape character (ESC, standard : " ^ "). Also the Escape mode (see chapter 3.1) has to be set to hexadecimal.

There are two ways of UDE handling :

- **Single-byte UDE ,**
- **Multi-byte UDE**

4.1 Single-byte UDE

The single byte UDE handling enables you to send one byte transparent from your terminal through the system to the printer. Enter the Escape character followed by the hexadecimal value. Note that the Escape character is only valid for the first following byte.

Syntax : `ESC < hexadecimal value >`

Example : **terminal input** **ASCII hex bytes** sent to the printer

`^1B`	`1B`
`^1B E`	`1B 45`
`^36`	`36`
`^1B^5B`	`1B 5B`
`^1B^5B^32^3B^31^78`	`1B 5B 32 3B 31 78`

4.2 Multi-Byte UDE

The multi byte UDE handling enables you to send a number of bytes transparent from your terminal through the system to the printer. It is based on the double start and single stop character. Also this method requires to enter the printable characters (in quotation marks) or the hexadecimal values.

Syntax : `ESC ESC < hexadecimal values`
`or "printable characters" > ESC`

Example : **terminal input** **ASCII hex bytes** sent to the printer

`^^1B5B^`	`1B 5B`
`^^1B5B323B3178^`	`1B 5B 32 3B 31 78`
`^^DA^`	`DA`
`^^1122"abcd"^`	`11 22 61 62 63 64`
`^^1122"ab""cd"^`	`11 22 61 62 63 64`
`^^1122<CR><LF>33^`	`11 22 33`

Example of the ESC p (Cancel / Select Proportional) command to set the printer to proportional pitch mode :

Hex code `1B 70 31`

The terminal input may have the following different formats :

UDE

`^1B ^70 ^31`	or
`^^1B 70 31^`	or
`^1B ^70 1`	or
`^^1B 70^ 1`	

Further examples :

- **Set page length in lines** (60)

Hex code 1B 43 3C

UDE ^^1B 43 3C^

- **Second Automatic Sheet Feeder (ASF)**

Hex code 1B 19 32

UDE ^^1B 19 32^

5 Diagnostic Features

For diagnostic purposes there are several printouts available which should be printed out if any errors occure. Please make the printouts if you encounter any interface related problems and pass them to your support technician.

5.1 Status sheet

The status sheet contains the systemparameters and additional information like software release, date of programming a.s.o..

- Set switch A1 to ON and the others to OFF.
- Turn the printer on.
- The status sheet is printed.
- The printer returns to normal operation.

5.2 Printout of the stored configuration

All in the PM IPDS stored configuration can be printed out :

- Set the switches A1 and B4 to ON and the others to OFF.
- Switch the printer on.
- A status sheet and the stored configuration are printed.
- The printer returns to normal operation.

5.3 Printout of Twinax datastream

For Twinax datastream analysis the switch A2 may be set to ON in print pauses. The input data will be printed directly in hexadecimal format.

5.4 Printout of printer datastream

Switch A3 may be switched to ON-position in print pauses. The output data of the interface will be printed for control purposes.

5.5 Print Test 3 (available on Operator Panel)

The first page of Print Test 3 gives all information on technical releases and the actual number of printed pages. On the next printed pages all available fonts are listed. These pages are not neccessary for service purposes.

5.6 Printout (available on Operator Panel)

This menu function initiates a printout of the parameter settings and macro definitions. This printout is helpful for further reference regarding the basic printer setup and when macros are to be changed.

Appendix A List of Font Numbers available

FGID	Font Global Identifier		
Name	Name of font		
Attributes	M	=	Monospace
	P	=	Proportional
	T	=	Typographic
	b	=	Bold
	i	=	Italics
	w	=	Double wide
Points	Point size (1/72")		
Pitch	Characters per inch		

1 Non-typographic fonts

FGID	Name	Attributes	Pitch
5	Orator-C	M	10
6	Orator-C italic	Mi	10
33	Orator italic	Mi	10
34	Orator bold/italic	Mbi	10
36	Orator	M	10
37	Orator-C bold/italic	Mb	10
38	Orator-C bold	Mb	10
45	Orator bold	Mb	10
66	Letter Gothic	M	12
67	Letter Gothic bold/italic	Mbi	12
68	Letter Gothic italic	Mi	12
69	Letter Gothic bold	Mb	12
70	Prestige Elite	M	12

FGID	Name	Attributes	Pitch
71	Prestige Elite italic	Mi	12
72	Prestige Elite bold	Mb	12
74	Prestige Elite bold/italic	Mbi	12
86	Roman	M	12
87	Orator	M	12
108	Orator bold/italic	Mbi	12
109	Orator italic	Mi	12
110	Orator bold	Mb	12
111	Roman bold	Mb	12
112	Roman italic	Mi	12
113	Roman bold/italic	Mbi	12

2 Typographic fonts

FGID	Name	Attribute	Punkte	Pitch
751	Times	T	-----	8
760	Times	T	-----	6
761	Times bold	Tb	-----	12
762	Times bold	Tb	-----	14
763	Times italic	Ti	-----	12
764	Times bold/italic	Tbi	-----	10
765	Times bold/italic	Tbi	-----	12
1051	Times	T	-----	10
1053	Times bold	Tb	-----	10
1056	Times italic	Ti	-----	10
1351	Times	T	-----	12
1653	Times bold	Tb	-----	16
1803	Times bold	Tb	-----	18
2103	Times bold	Tb	-----	24
5687	Times	T	-----	6, 8, 10, 12
5705	Times bold	Tb	-----	10, 12, 14, 18, 24
5815	Times italic	Ti	-----	10, 12
5835	Times bold/italic	Tbi	-----	10, 12

Appendix B Error Messages

1 Error messages after switching on

After turning on the printer the PM IPDS performs several tests. If an error is detected LED 1 flashes in a certain way. Four short (S) or long (L) impulses followed by a pause identify one of the messages described in table 16.

Table 17: **Error messages after switching on**

Message	Meaning
SSSL	EPROM defective
SSLS	RAM 1 defective
SSLL	RAM 2 defective
SLSS	Twinax interface defective
SLSL	Configuration error
SLLS	Checksum incorrect
LSSS	Twinax parameter error

2 Configuration errors

If any faults are detected in the downloaded resource, an error number is placed at this position and the remaining file will be printed.

Table 18: **Configuration errors**

Error number	Meaning
1	Resource name incorrect - Name does not consist of two letters - Name is not enclosed in quotation marks - An invalid digit follows behind the name
2	Point behind the last bracket is missing - Resource file does not end with a point
3	Too many resources - Resources buffer is full
4	Opening bracket expected - Bracket at the beginning of the resource is missing - Bracket at the beginning of a group is missing
5	Closing bracket expected - Bracket at the end of the resource is missing - Bracket at the end of a group is missing - Comma between resources is missing - Comma between groups is missing
6	Character string incorrect - Control code in char. string, $00 to $1F or $7F to $FF - Closing quotation mark is missing
7	Number outside value range - Number is too big or too small
8	Printer adaption identifier not allowed - One of the digits 1 to 8 was written behind the resource name at one of the system resources

Error number	Meaning
9	Structure of resource incorrect - An invalid combination of groups and/or numbers and/or character strings was given for the resource
10	Wrong number of items within a resource - An exactly given number of digits an/or character strings is needed for the resource
11	Too many items in a resource or a group - The number of digits and/or character strings max. allowed for the resource is exceeded
12	Not enough items in a resource or a group - The required lowest number of digits and/or character strings was not given for the resource
13	Wrong number of groups in a resource - An exactly given number of groups is needed for the resource
14	Too many groups in a resource - An exactly given number of groups is needed for the resource
15	Not enough groups in a resource - The number of groups max. allowed for the resource is exceeded
16	Wrong number of items in a group - An exactly given number of digits and/or character strings is needed for the group

3 Twinax: List of error messages

3.1 Data-Check Exceptions

Exception ID	Specification
0821..00	Undefined character
0821..00	Asynchronous undefined character
0829..00	Double-byte font section is not loaded or is invalid
0860..00	Numeric representation precision check
08C1..00	Position check
08C1..00	Asynchronous Position check

3.2 Specification Checks-IO Image Exception

Exception ID	Specification
0500..01	Invalid or unsupported IO image self-defining field code
0500..03	Invalid or unsupported IO image self-defining field length
0500..04	Invalid IO image self-defining field value
0570..0F	IO Image Begin Segment out of sequence
0571..0F	IO Image End Segment out of sequence
0591..0F	IO Image Begin Image Content out of sequence
0592..0F	IO Image Image Data Self-Defining Field out of sequence
0593..0F	IO Image End Image Content out of sequence
0594..01	Inconsistent Image Size Parameter value and Image Data
0594..0F	IO Image Image Size Parameter missing or out of sequnece
0594..10	IO Image Image Size Parameter value unsupported
0594..11	IO Image Image Size Parameter and Image Encoding Parameter inconsistent
0595..0F	IO Image Image Encoding Parameter out of sequence
0595..10	IO Image Image Encoding Parameter value is unsupported
0696..0F	IO Image Data Element Size Parameter out of sequence
0596..10	IO Image Image Data Element Size Parameter value unsupported
0596..11	IO Image Image Data Element Size Parameter and Image Encoding Parameter inconsistent
0597..0F	IO Image Im. Look Up Table ID Parameter out of sequence
0597..10	IO Image Image Look Up Table ID Parameter value unsupported
05A9..02	IO Image data outside of the Image Presentation Space

3.3 Specification Checks-Bar Code Exceptions

Exception ID	Specification
0403..00	Invalid or unsupported bar code type
0404..00	Unsupported local-font ID or font not available
0405..00	Invalid or unsupported bar code color
0406..00	Invalid or unsupported module width
0407..00	Invalid or unsupported element height
0408..00	Invalid or unsupported height multiplier
0409..00	Invalid or unsupported wide-to-narrow ratio
040A..00	Invalid or unsupported symbol reference point
040B..00	Invalid or unsupported bar code modifier
040C..00	Invalid or unsupported bar code data length
040E..00	Check-digit calculation exception
0410..00	Invalid or unsupported human-readable interpretation location
0411..00	Attempt to print portion of symbol outside block
0411..00	Asynchronous attempt to print portion of symbol outside block

C.3.4 Specification Checks-Graphics Data Exceptions

Exception ID	Specification
0300..01	Unallocated or unsupported graphics order or command code
0300..02	Reserved byte exception or invalid attribute set
0300..03	Incorrect drawing order length
0300..04	Invalid attribute value
0300..08	Truncated order exception
0300..0C	Segment prolog exception
0300..0D	Vitual graphics presentation-space overflow
0300..0E	Unsupported attribute value
0300..21	Invalid or unsupported default
0304..00	Invalid Segment Characteristics drawing order
0334..00	Character angle value not supported
033E..00	Invalid End Prolog
0360..00	Area bracket exception
0368..00	Begin Area received incorrectly
0368..01	Area truncated exception
0368..02	Supported order invalid in area
0368..03	Pattern Symbol Set not supported
0368..04	Undefined pattern symbol

Exception ID	Specification
0370..01	Unsupported Begin Segment Introducer segment flag
0370..82	Invalid Begin Segment Introducer segment flag
0370..C1	Invalid Begin Segment Introducer length
0370..C5	Insufficient segment data
0392..00	Graphics image order sequence exception
0392..01	Image data discrepancy
0393..00	Graphics image bracket exception
0393..01	Incorrect number of Image Data drawing orders
03C2..00	Marker Symbol Set not supported
03C2..01	Undefined marker code
03C2..02	Mismatched marker-symbol set exception
03C3..00	Font not available
03C3..01	Undefined graphics character code
03C3..01	Asynchronously detected undefined graphics character code
03C3..02	Mismatched character symbol set exception
03C6..01	Arc drawing check
03D1..00	Truncated graphics image exception
03D1..01	Invalid order in graphics image
03D1..02	Graphics image format not supported
03D1..03	Image width greater than maximum supported
03D1..04	Image height greater than maximum supported
03E1..00	Relative line outside coordinate space

3.5 Specification Check-General Exceptions

Exception ID	Specification
0200..01	Embedded text-control code exception
0202..01	End Suppression (ESU) text-control exception
0202..02	Invalid or unsupported IPDS command length
0202..05	Invalid data structured-field length
0203..02	IPDS command header length too small
0203..05	Invalid or unsupported block orientation
0204..01	EP command encountered
0204..02	Invalid use of Acknowledgement Continuation Bit
0204..05	Invalid or unsupported value for area-position reference system
0205..01	Invalid spanning sequence
0205..05	Invalid or unsupported structured-field unit base
0206..01	Invalid Begin Suppression (BSU)
0206..05	Invalid or unsupported structured field L-units
0207..05	Invalid or unsupported structured-field extents
0208..05	Invalid or unsupported mapping option
0209..05	Invalid or unsupported axis offsets
020A..05	Data within a block might be outside the VPA
020A..05	Data within a block might be outside the VPA (asynchronously detected)
020B..05	Invalid structured-field identifier
020C..01	Invalid or unsupported local-font ID
020F..01	Invalid or unsupported Set Text Orientation (STO)
0210..01	Invalid or unsupported Set Inline Margin (SIM)
0211..01	Invalid or unsupported Set Baseline increment (SBI)
0212..01	Invalid or unsupported intercharacter adjustment
0212..02	Font storage is full
0213..01	Invalid or unsupported Absolute Move Baseline (AMB)
0214..01	Invalid or unsupported Absolute Move Inline (AMI)
0214..02	The font, font section, or font index to be deleted not found
0215..01	Invalid or unsupported Relative Move Inline (RMI)
0215..02	Invalid or unsupported DF command font or font-section ID
0216..01	Invalid or unsupported Relative Move Baseline (RMB)
0217..01	Invalid or unsupported Set Variable-Space Increment (SVI)
0217..02	Invalid or unsupported value for DF command deletion type
0218..02	Invalid, unsupported, or unavailable font ID

Exception ID	Specification
0219..01	Invalid or unsupported value for Repeat String (RPS) repeat length
0219..02	Multiple occurences of the same LFE font-equivalence number
021A..01	Repeat String (RPS) or Transparent Data (TRN) exception
021B..01	Repeat String (RPS) target-string length exception
021B..02	Invalid or unsupported Load Font Control unit base
021C..01	Invalid escape sequence
021D..02	Invalid or unsupported value for the Load Font Equivalence global font
021E..01	Invalid WT text-control length
021E..02	Mismatch between font and the XOA Print Quality Control (PQC) command
021F..01	Repeat String (RPS) length exception
021F..02	Mismatch of LFE command font Host-Assigned IDs
0220..02	Invalid LFC font stageability byte
0221..02	Invalid or unsupported value for Load Font Control font-index format
0222..02	Invalid or unsupported Load Font Control data pattern format
0223..02	Invalid or unsupported value for Load Font Control font-type bits
0226..02	Invalid or unsupported LSS or LFC X-box size
0227..02	Invalid or unsupported LSS or LFC Y-box size
0228..02	The LSS pattern download format is either reserved or unsupported
0229..02	Invalid or unsupported value for LSS additional parameter byte length
022A..02	Invalid or unsupported value for Load Font Control X-density
022B..02	Invalid or unsupported value for Load Font Control Y-density
022D..02	Invalid or unsupported value for Load Font Control character data alignment
022E..02	Insufficient font data received
0230..01	Insufficient storage for LCC copy-control record
0231..01	Invalid or unsupported value for Load Copy Control number of copies
0232..01	Invalid or unsupported Load Copy Control keyword in copy group entry
0232..02	Excess font data received

Exception ID	Specification
0233..02	Invalid or unsupported value for Load Font Index maximum baseline extent
0234..01	Invalid or unsupported value for Load Copy Control entry-byte count
0236..01	Invalid or unsupported Load Copy Control simplex/duplex parameter
0238..01	Maximum supported number of overlays per LCC copy group exceeded
0238..02	Double-byte fonts not supported
0239..01	Maximum supported number of suppressions per LCC copy group exceeded
0239..02	LFC font Host-Assigned ID already assigned
023A..02	Maximum number of fonts allowed by the printer exceeded
023B..01	Inconsistent command length
0246..02	Invalid parameter in the LFI command
0247..01	Invalid or unsupported value for Write Image Control magnification factor
0247..02	Invalid or unsupported value for Load Font Equivalence font-inline sequence
0248..01	Invalid or unsupported value for Write Image Control scan-line direction
0248..02	Invalid or unsupported value for Load Symbol Set section identifier
0249..01	Invalid scan-line-sequence direction in the WIC command
0249..02	Invalid or unsupported value for Load Symbol Set starting code point
024A..01	Invalid or unsupported value for Write Image Control image block location
024A..02	Invalid or unsupported value for Load Symbol Set ending code point
024B..02	Invalid or unsupported bit value for Load Symbol Set flag bytes
024C..02	Invalid or unsupported value for Load Symbol Set data length
024D..02	Insufficient storage for font-control and font-index records
0253..01	Invalid or unsupported value for Write Image Control image color
0258..03	Invalid or unsupported value for text color
0260..02	Invalid or unsupported value for Load Page Descriptor Xp and I L-units per unit base

Exception ID	Specification
0261..02	Invalid L-Units (Yp) Value in the LPD command
0262..02	Invalid or unsupported value for Load Page Descriptor Xp-extent
0263..01	Insufficient pattern storage
0263..02	Invalid or unsupported value for Load Page Descriptor Yp-extent
0264..01	Insufficient control storage
0264..02	Invalid or unsupported value for Load Page Descriptor unit base
0268..02	Invalid or unsupported value for Load Page Descriptor inline sequence direction
0269..02	Invalid baseline-sequence direction in the LPD command
026A..01	Insufficient source image data
026A..02	Invalid or unsupported valur for Load Page Descriptor initial I print coordinate
026B..01	Excess source image data received
026B..02	Invalid or unsupported value for Load Page Descriptor initial B print coordinate
026F..02	Invalid Media Origin parameter specified in an XOH-SMO command
0270..02	Invalid or unsupported value for XOH Set Media Size L-units per unit base
0272..02	Invalid or unsupported value for XOH Set Media Size Xm-extent
0273..02	Invalid or unsupported value for XOH Set Media Size Ym-extent
0274..02	Invalid or unsupported value for XOH Set Media Size unit base
0280..02	Invalid or unsupported rule width
0281..01	Insufficient storage for a page segment or overlay
0282..02	Invalid or unsupported rule length
0285..01	Invalid or unsupported value for Delete Overlay command overlay ID
028A..01	Invalid or unsupported value for Delete Page Segment command page segment Host-Assigned ID
0290..01	Invalid or unsupported Overlay ID
0291..01	BO overlay ID already loaded
0291..02	Invalid or unsupported value for XOA Request Resource listentry
0292..01	Overlay ID not loaded
0292..02	Invalid XOA Print-Quality Control (PQC) parameter
0293..01	Recursive overlay invocation
0294..01	Invalid or unsupported value for page segment Host-Assigned ID
0295..01	Page segment Host-Assigned ID already loaded

Exception ID	Specification
0295..02	Invalid or unsupported value for XOH Page Counters Control command page-counter update
0296..01	Page segment Host-Assigned ID not loaded
0297..01	Page segment nesting limit or overlay nesting limit exceeded
0298..01	Invalid or unsupported suppression number
0298..03	Invalid or unsupported value for Temporary Baseline Move text control
0299..02	Invalid Edge Mark Parameter
02A4..01	Page X-dimension too large to represent in the printer
02A5..01	Page Y-dimension too large to represent in the printer
02AB..01	Insufficient page-buffer storage to print the sheet
02AC..01	Insufficient main storage to print the sheet
02AD..01	Invalid or unsupported value for Load Page Position command
02AE..01	Invalid or unsupported value for Include Overlay command
02AF..01	Insufficient storage to print the sheet
02AF..01	Asynchronously detected insufficient storage to print the sheet
02C0..01	Mixture of Xm-axis duplex and Ym-axis duplex copy groups
02C1..01	Maximum number of simlpex or duplex keywords in an LCC command
02C1..02	Internal value not unique in an LE command
02C2..01	Odd number of duplex copy groups in an LCC command
02C3..01	Mixture of simplex and duplex parameters in an LCC command
02C4..01	Unequal copy counts in an LCC command
02C5..01	Unable to delete resource
02C6..02	Invalid mapping type in an LE command
02C8..02	Invalid or unsupported internal value or external value in an Load Equivalence command
02FF..02	Exception detected but not queued

Appendix C Code Pages

The following table shows the Code Pages supported by the PM IPDS.

Code Page (IPDS)	Nationality
500 1148	International
37 1140	USA / Canada
273 1141	Germany / Austria
274	Belgium
275	Brazil
276	Canadian French
277 1142	Denmark / Norway
278 1143	Finland / Sweden
297 1147	France
280 1144	Italy
282	Portugal
284 1145	Spain
285 1146	United Kingdom
870	Latin 2
875 423	Greek
890	Yugoslavia
1026	Turkish
340	OCR-A
892	OCR-B

Code pages 11xx support ECECP European Extended Code Page with EURO -symbol.

Code Page 500 - International

	4	5	6	7	8	9	A	B	C	D	E	F
0		&	-	ø	Ø	°	µ	¢	{	}	\	0
1		é	/	É	a	j	~	£	A	J		1
2	â	ê	Â	Ê	b	k	s	¥	B	K	S	2
3	ä	ë	Ä	Ë	c	l	t	.	C	L	T	3
4	à	è	À	È	d	m	u	*ƒ*	D	M	U	4
5	á	í	Á	Í	e	n	v	§	E	N	V	5
6	ã	î	Ã	Î	f	o	w	¶	F	O	W	6
7	å	ï	Å	Ï	g	p	x	¼	G	P	X	7
8	ç	ì	Ç	Ì	h	q	y	½	H	Q	Y	8
9	ñ	ß	Ñ	¦	i	r	z	¾	I	R	Z	9
A	[	]	¦	:	*	ª	¡	¬	–	1	2	3
B	.	$	,	#	+	º	¿	*	ô	û	Ô	Û
C	<	%	%	@	ð	æ	Ð	¯	ö	ü	Ö	Ü
D	(	)	_	‘	ý	¸	Ý	¨	ò	ù	Ò	Ù
E	+	;	>	=	þ	Æ	Þ	´	ó	ú	Ó	Ú
F	!	^	?	“	±	¤	®	=	õ	ÿ	Õ	

Code Page 37 - USA / Canada

	4	5	6	7	8	9	A	B	C	D	E	F
0		&	-	ø	Ø	°	µ	^	{	}	\	0
1		é	/	É	a	j	~	£	A	J		1
2	â	ê	Â	Ê	b	k	s	¥	B	K	S	2
3	ä	ë	Ä	Ë	c	l	t	.	C	L	T	3
4	à	è	À	È	d	m	u	*f*	D	M	U	4
5	á	í	Á	Í	e	n	v	§	E	N	V	5
6	ã	î	Ã	Î	f	o	w	¶	F	O	W	6
7	å	ï	Å	Ï	g	p	x	¼	G	P	X	7
8	ç	ì	Ç	Ì	h	q	y	½	H	Q	Y	8
9	ñ	ß	Ñ	‹	i	r	z	¾	I	R	Z	9
A	¢	!	¦	:	*	ª	¡	[	–	¹	²	³
B	.	$	,	#	+	º	¿	]	ô	û	Ô	Û
C	<	*	%	@	ð	æ	Ð	¯	ö	ü	Ö	Ü
D	(	)	_	‘	ý	¸	Ý	¨	ò	ù	Ò	Ù
E	+	;	>	=	þ	Æ	Þ	´	ó	ú	Ó	Ú
F	|	¬	?	“	±	¤	®	=	õ	ÿ	Õ	

Code Page 273 - Germany / Austria

	4	5	6	7	8	9	A	B	C	D	E	F
0		&	-	ø	Ø	°	µ	¢	ä	ü	ö	0
1		é	/	É	a	j	ß	£	A	J		1
2	â	ê	Â	Ê	b	k	s	¥	B	K	S	2
3	}	ë	[	Ë	c	l	t	.	C	L	T	3
4	à	è	À	È	d	m	u	*ƒ*	D	M	U	4
5	á	í	Á	Í	e	n	v	@	E	N	V	5
6	ã	î	Ã	Î	f	o	w	¶	F	O	W	6
7	å	ï	Å	Ï	g	p	x	¼	G	P	X	7
8	ç	ì	Ç	Ì	h	q	y	½	H	Q	Y	8
9	ñ	~	Ñ	¦	i	r	z	¾	I	R	Z	9
A	Ä	Ü	ö	:	*	ª	¡	¬	–	¹	²	³
B	.	$	,	#	+	º	¿	*	ô	û	Ô	Û
C	<	%	%	§	ð	æ	Ð	¯	¦	}	\	]
D	(	)	_	‘	ý	¸	Ý	¨	ò	ù	Ò	Ù
E	+	;	>	=	þ	Æ	Þ	´	ó	ú	Ó	Ú
F	!	^	?	“	±	¤	®	=	õ	ÿ	Õ	

Code Page 274 - Belgium

	4	5	6	7	8	9	A	B	C	D	E	F
0		&	-	ø	Ø	°	µ	¢	é	è	ç	0
1		{	/	É	a	j	¨	£	A	J		1
2	â	ê	Â	Ê	b	k	s	¥	B	K	S	2
3	ä	ë	Ä	Ë	c	l	t	.	C	L	T	3
4	@	}	À	È	d	m	u	*f*	D	M	U	4
5	á	í	Á	Í	e	n	v	§	E	N	V	5
6	ã	î	Ã	Î	f	o	w	¶	F	O	W	6
7	å	ï	Å	Ï	g	p	x	¼	G	P	X	7
8	\	ì	Ç	Ì	h	q	y	½	H	Q	Y	8
9	ñ	ß	Ñ	‌	i	r	z	¾	I	R	Z	9
A	[	]	ù	:	*	ª	¡	¬	–	¹	²	³
B	.	$	,	#	+	º	¿	*	ô	û	Ô	Û
C	<	%	%	à	ð	æ	Ð	¯	ö	ü	Ö	Ü
D	(	)	_	‘	ý	¸	Ý	~	ò	¦	Ò	Ù
E	+	;	>	=	þ	Æ	Þ	´	ó	ú	Ó	Ú
F	!	^	?	“	±	¤	®	=	õ	ÿ	Õ	

Code Page 275 - Brazil

	4	5	6	7	8	9	A	B	C	D	E	F
0		&	-	ø	Ø	°	µ	¢	õ	é	\	0
1		}	/	É	a	j	:	£	A	J		1
2	â	ê	Â	Ê	b	k	s	¥	B	K	S	2
3	ä	ë	Ä	Ë	c	l	t	.	C	L	T	3
4	à	è	À	È	d	m	u	*ƒ*	D	M	U	4
5	á	í	Á	Í	e	n	v	§	E	N	V	5
6	!	î	@	Î	f	o	w	¶	F	O	W	6
7	å	ï	Å	Ï	g	p	x	¼	G	P	X	7
8	¦	ì	]	Ì	h	q	y	½	H	Q	Y	8
9	ñ	ß	Ñ	ã	i	r	z	¾	I	R	Z	9
A	É	$	ç	:	*	ª	¡	¬	–	1	2	3
B	.	Ç	,	Õ	+	º	¿	*	ô	û	Ô	Û
C	<	%	%	Ã	ð	æ	Ð	¯	ö	ü	Ö	Ü
D	(	)	_	‘	ý	¸	Ý	¨	ò	ù	Ò	Ù
E	+	;	>	=	þ	Æ	Þ	´	ó	ú	Ó	Ú
F	!	^	?	“	±	¤	®	=	{	ÿ	#	

Code Page 276 - Canadian French

	4	5	6	7	8	9	A	B	C	D	E	F
0		&	-	ø	Ø	°	µ	¢	é	è	¸	0
1		{	/	É	a	j	¨	£	A	J		1
2	â	ê	Â	Ê	b	k	s	¥	B	K	S	2
3	ä	ë	Ä	Ë	c	l	t	.	C	L	T	3
4	[	}	À	È	d	m	u	*f*	D	M	U	4
5	á	í	Á	Í	e	n	v	§	E	N	V	5
6	ã	î	Ã	Î	f	o	w	¶	F	O	W	6
7	å	ï	Å	Ï	g	p	x	¼	G	P	X	7
8	ç	ì	Ç	Ì	h	q	y	½	H	Q	Y	8
9	ñ	ß	Ñ	^	i	r	z	¾	I	R	Z	9
A	à	´	ù	:	*	ª	¡	¬	–	1	2	3
B	.	$	,	#	+	º	¿	*	ô	û	Ô	Û
C	<	%	%	@	ð	æ	Ð	¯	ö	ü	Ö	Ü
D	(	)	_	‘	ý	\	Ý	~	ò	¦	Ò	Ù
E	+	;	>	=	þ	Æ	Þ	]	ó	ú	Ó	Ú
F	!	^	?	“	±	¤	®	=	õ	ÿ	Õ	

Code Page 277 - Denmark / Norway

	4	5	6	7	8	9	A	B	C	D	E	F
0		&	-	¦	@	°	µ	¢	æ	å	\	0
1		é	/	É	a	j	ü	£	A	J		1
2	â	ê	Â	Ê	b	k	s	¥	B	K	S	2
3	ä	ë	Ä	Ë	c	l	t	.	C	L	T	3
4	à	è	À	È	d	m	u	*ƒ*	D	M	U	4
5	á	í	Á	Í	e	n	v	§	E	N	V	5
6	ã	î	Ã	Î	f	o	w	¶	F	O	W	6
7	}	ï	$	Ï	g	p	x	¼	G	P	X	7
8	ç	ì	Ç	Ì	h	q	y	½	H	Q	Y	8
9	ñ	ß	Ñ	`	i	r	z	¾	I	R	Z	9
A	#	¤	ø	:	*	ª	¡	¬	–	1	2	3
B	.	Å	,	Æ	+	º	¿	*	ô	û	Ô	Û
C	<	%	%	Ø	ð	{	Ð	¯	ö	~	Ö	Ü
D	(	)	_	‘	ý	¸	Ý	¨	ò	ù	Ò	Ù
E	+	;	>	=	þ	Æ	Þ	´	ó	ú	Ó	Ú
F	!	^	?	“	±	]	®	=	õ	ÿ	Õ	

Code Page 278 - Finland / Sweden

	4	5	6	7	8	9	A	B	C	D	E	F
0		&	-	ø	Ø	°	µ	¢	ä	å	É	0
1		`	/	\	a	j	ü	£	A	J		1
2	â	ê	Â	Ê	b	k	s	¥	B	K	S	2
3	{	ë	#	Ë	c	l	t	.	C	L	T	3
4	à	è	À	È	d	m	u	*ƒ*	D	M	U	4
5	á	í	Á	Í	e	n	v	[	E	N	V	5
6	ã	î	Ã	Î	f	o	w	¶	F	O	W	6
7	}	ï	$	Ï	g	p	x	¼	G	P	X	7
8	ç	ì	Ç	Ì	h	q	y	½	H	Q	Y	8
9	ñ	ß	Ñ	é	i	r	z	¾	I	R	Z	9
A	§	¤	ö	:	*	ª	¡	¬	–	1	2	3
B	.	Å	,	Ä	+	º	¿	*	ô	û	Ô	Û
C	<	%	%	Ö	ð	æ	Ð	¯	¦	~	@	Ü
D	(	)	_	‘	ý	¸	Ý	¨	ò	ù	Ò	Ù
E	+	;	>	=	þ	Æ	Þ	´	ó	ú	Ó	Ú
F	!	^	?	“	±	]	®	=	õ	ÿ	Õ	

Code Page 297 France

	4	5	6	7	8	9	A	B	C	D	E	F
0		&	-	ø	Ø	[	!	¢	é	è	ç	0
1		{	/	É	a	j	¨	#	A	J		1
2	â	ê	Â	Ê	b	k	s	¥	B	K	S	2
3	ä	ë	Ä	Ë	c	l	t	.	C	L	T	3
4	@	}	À	È	d	m	u	*f*	D	M	U	4
5	á	í	Á	Í	e	n	v	]	E	N	V	5
6	ã	î	Ã	Î	f	o	w	¶	F	O	W	6
7	å	ï	Å	Ï	g	p	x	¼	G	P	X	7
8	\	ì	Ç	Ì	h	q	y	½	H	Q	Y	8
9	ñ	ß	Ñ	F	i	r	z	¾	I	R	Z	9
A	°	§	ù	:	*	ª	¡	¬	–	¹	²	³
B	.	$	,	£	+	º	¿	*	ô	û	Ô	Û
C	<	%	%	à	ð	æ	Ð	¯	|	~	@	Ü
D	(	)	_	‘	ý	¸	Ý	¨	ò	¦	Ò	Ù
E	+	;	>	=	þ	Æ	Þ	´	ó	ú	Ó	Ú
F	!	ˆ	?	“	±	¤	®	=	õ	ÿ	Õ	

Code Page 280 - Italy

	4	5	6	7	8	9	A	B	C	D	E	F
0		&	-	ø	Ø	[	µ	¢	à	è	ç	0
1		]	/	É	a	j	ì	#	A	J		1
2	â	ê	Â	Ê	b	k	s	¥	B	K	S	2
3	ä	ë	Ä	Ë	c	l	t	.	C	L	T	3
4	{	}	À	È	d	m	u	*f*	D	M	U	4
5	á	í	Á	Í	e	n	v	@	E	N	V	5
6	ã	î	Ã	Î	f	o	w	¶	F	O	W	6
7	å	ï	Å	Ï	g	p	x	¼	G	P	X	7
8	\	~	Ç	Ì	h	q	y	½	H	Q	Y	8
9	ñ	ß	Ñ	ù	i	r	z	¾	I	R	Z	9
A	°	é	ò	:	*	ª	¡	¬	–	1	2	3
B	.	$	,	£	+	º	¿	*	ô	û	Ô	Û
C	<	%	%	§	ð	æ	Ð	¯	ö	ü	Ö	Ü
D	(	)	_	‘	ý	¸	Ý	¨	¦	`	Ò	Ù
E	+	;	>	=	þ	Æ	Þ	´	ó	ú	Ó	Ú
F	!	^	?	“	±	¤	®	=	õ	ÿ	Õ	

Code Page 282 - Portugal

	4	5	6	7	8	9	A	B	C	D	E	F
0		&	-	ø	Ø	E	µ	¢	ã	´	Ç	0
1		é	/	É	a	j	ç	£	A	J		1
2	â	ê	Â	Ê	b	k	s	¥	B	K	S	2
3	ä	ë	Ä	Ë	c	l	t	.	C	L	T	3
4	à	è	À	È	d	m	u	*f*	D	M	U	4
5	á	í	Á	Í	e	n	v	§	E	N	V	5
6	{	î	#	Î	f	o	w	¶	F	O	W	6
7	å	ï	Å	Ï	g	p	x	¼	G	P	X	7
8	~	ì	\	Ì	h	q	y	½	H	Q	Y	8
9	ñ	ß	Ñ	!	i	r	z	¾	I	R	Z	9
A	[	]	õ	:	*	ª	¡	¬	–	1	2	3
B	.	$	,	Ã	+	º	¿	*	ô	û	Ô	Û
C	<	‰	%	Õ	ð	æ	Ð	¯	ö	ü	Ö	Ü
D	(	)	_	‘	ý	¸	Ý	¨	ò	ù	Ò	Ù
E	+	;	>	=	þ	Æ	Þ	}	ó	ú	Ó	Ú
F	!	ˆ	?	“	±	¤	®	=	¦	ÿ	@	

Code Page 284 - Spain

	4	5	6	7	8	9	A	B	C	D	E	F
0		&	-	ø	Ø	É	µ	¢	{	}	\	0
1		é	/	É	a	j	¨	£	A	J		1
2	â	ê	Â	Ê	b	k	s	¥	B	K	S	2
3	ä	ë	Ä	Ë	c	l	t	.	C	L	T	3
4	à	è	À	È	d	m	u	*f*	D	M	U	4
5	á	í	Á	Í	e	n	v	§	E	N	V	5
6	ã	î	Ã	Î	f	o	w	¶	F	O	W	6
7	å	ï	Å	Ï	g	p	x	¼	G	P	X	7
8	ç	ì	Ç	Ì	h	q	y	½	H	Q	Y	8
9	¦	ß	#	!	i	r	z	¾	I	R	Z	9
A	[	]	ñ	:	*	ª	¡	^	_	¹	²	³
B	.	$	,	Ñ	+	º	¿	!	ô	û	Ô	Û
C	<	%	%	@	ð	æ	Ð	¯	ö	ü	Ö	Ü
D	(	)	_	‘	ý	¸	Ý	~	ò	ù	Ò	Ù
E	+	;	>	=	þ	Æ	Þ	ß	ó	ú	Ó	Ú
F	*	¬	?	“	±	¤	®	=	õ	ÿ	Õ	

Code Page 285 - United Kingdom

	4	5	6	7	8	9	A	B	C	D	E	F
0		&	-	ø	Ø	É	µ	¢	{	}	\	0
1		é	/	É	a	j	)	[	A	J		1
2	â	ê	Â	Ê	b	k	s	¥	B	K	S	2
3	ä	ë	Ä	Ë	c	l	t	.	C	L	T	3
4	à	è	À	È	d	m	u	*ƒ*	D	M	U	4
5	á	í	Á	Í	e	n	v	§	E	N	V	5
6	ã	î	Ã	Î	f	o	w	¶	F	O	W	6
7	å	ï	Å	Ï	g	p	x	¼	G	P	X	7
8	ç	ì	Ç	Ì	h	q	y	½	H	Q	Y	8
9	ñ	ß	Ñ	!	i	r	z	¾	I	R	Z	9
A	$	!	¦	:	*	ª	¡	^	_	1	2	3
B	.	£	,	#	+	º	¿	]	ô	û	Ô	Û
C	<	%	%	@	ð	æ	Ð	~	ö	ü	Ö	Ü
D	(	)	_	‘	ý	¸	Ý	¨	ò	ù	Ò	Ù
E	+	;	>	=	þ	Æ	Þ	§	ó	ú	Ó	Ú
F	*	¬	?	“	±	¤	®	=	õ	ÿ	Õ	

Code Page 340 - OCR-A

	4	5	6	7	8	9	A	B	C	D	E	F
0		&	-		Ø				{	}	\	0
1			/		a	j		£	A	J		1
2					b	k	s	¥	B	K	S	2
3			Ä		c	l	t		C	L	T	3
4					d	m	u		D	M	U	4
5					e	n	v		E	N	V	5
6					f	o	w		F	O	W	6
7			Å		g	p	x		G	P	X	7
8					h	q	y		H	Q	Y	8
9			Ñ		i	r	z		I	R	Z	9
A	[	]		:					-			
B	.	$	,	#					⌐	⌡	⌴	
C	<	*	%	@							Ö	Ü
D	(	)		‘								
E	+	;	>	=		Æ					Ó	
F	!		?	“								

Code Page 892 - OCR-B

	4	5	6	7	8	9	A	B	C	D	E	F
0		&	-		Ø				{	}	\	0
1			/		a	j		£	A	J		1
2					b	k	s	¥	B	K	S	2
3			Ä		c	l	t		C	L	T	3
4					d	m	u		D	M	U	4
5					e	n	v		E	N	V	5
6					f	o	w		F	O	W	6
7			Å		g	p	x		G	P	X	7
8					h	q	y		H	Q	Y	8
9			Ñ		i	r	z		I	R	Z	9
A	[	]		:					-			
B	.	$	,	#					⊣	⌡	⊔	
C	<	*	%	@							Ö	Ü
D	(	)		‘								
E	+	;	>	=		Æ					Ó	
F	!		?	“								

Internal Character Conversion Table

	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0		0		P		p		*	ƒ	°	À	Ð	à	ð
1	!	1	A	Q	a	q	#	)	*	±	Á	Ñ	á	ñ
2	“	2	B	R	b	r	$	3	¢	²	Â	Ò	â	ò
3		3	C	S	c	s	@	+	£	³	Ã	Ó	ã	ó
4		4	D	T	d	t	[	,	¤	´	Ä	Ô	ä	ô
5	%	5	E	U	e	u	\	-	¥	µ	Å	Õ	å	õ
6	&	6	F	V	f	v	]	.	┘	¶	Æ	Ö	æ	ö
7	‘	7	G	W	g	w	^	0	§	"	Ç	x	ç	÷
8	(	8	H	X	h	x	_	1	¨	¸	È	Ø	è	ø
9	)	9	I	Y	i	y	!	2	©	¹	É	Ù	é	ù
A	*	:	J	Z	j	z	{	/	ª	º	Ê	Ú	ê	ú
B	+	;	K		k		¦	┤	*	+	Ë	Û	ë	û
C	,	<	L		l		)	⅀	¬	¼	Ì	Ü	ì	ü
D	-	=	M		m		~	#	-	½	Í	Ý	í	ý
E	.	>	N		n		*	$	®	¾	î	Þ	î	þ
F	/	?	O		o		$	4	¯	¿	Ï	ß	ï	ÿ